

July 20, 1959

Pilot Report On Nibbio F.14

Weather System Team Is Chosen

Aviation Week

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Northrop T-38 Talon



Here's real
FASTENER POWER
KAYLOCK: 160,000 PSI

In hem... a powerful, new Kaylock line... now a whopping 160,000 psi! Smaller, lighter, stronger all metal self-locking nuts ever made. Under-made by KAYNAR for 160,000 psi NASA high tensile shear shear stress and holds.

Latest addition to the KAYLOCK line is the H14. Lightweight hem... best wrench clearance for narrow flanges... mightiest lightweight yet!

NEW H14 SAVES MOST IN SPACE + SIZE + WEIGHT

STRONGER—Strength to weight ratios increased up to 21%... LOWER—dome free height is WAS .61".

LIGHTER—20% to 67% below H10 or NAS479 under hex nuts.

SMALLER—By 2 to 5 inches over their standard AN and NAS nuts.

SPACE SAVER—Narrower flanges. Allows best clearances for tightest design.

SELF-LOCKING—With patented serrated locking principle.

MATERIALS—Available in carbon steel for 210°F. temperature. These configurations also in AM350T and A36 corrosion resistant steel.



FOR COMPETITIVE REASONS repeat your products won't be out to you. To get the latest information on the history of Kaylock's new high tensile strength line of 160,000 psi self-locking nuts.

KAYNAR MFG. CO., INC.—KAYLOCK DIVISION
 World's largest and oldest manufacturer of highstrength, all metal self-locking nuts. House offices and plant. Write Box 2205, Terminal Annex, Los Angeles 54. Branch offices, warehouse & representatives in Wichita, Kansas; New York, N.Y.; Atlanta, Georgia; Canadian Distributor: Aerovac Aero. Ltd., Montreal, Quebec.



Announcing—a completely new transparent material with the strength of stretched acrylic, the clarity of glass and the high heat resistance required by advanced supersonic aircraft....

thermoshield

To appreciate THERMOSHIELD—new transparent plastic composite by Goodyear Aircraft—consider these three facts:

1 Canopies and windshields for supersonic aircraft are subjected to intense aerodynamic heating. Some transparent materials can resist such heat.

2 Extreme pressure changes during supersonic flight are calling for materials of greater structural strength. Stretched acrylic plastics can meet this requirement.

3 Canopy bubbles are being designed for optimum performance using compound curvatures. Thus, the materials must be capable of being formed in contours without losing desired properties. Certain processes fail this test.

Not until now, however, has one product met all three requirements of supersonic flight without sacrifice in optical quality. For name—**THERMOSHIELD**. It was developed and is now being produced by Goodyear Aircraft, a pioneer in the field of stretched acrylics and high temperature laminates.

Secondly, THERMOSHIELD is a toughly laminate using stretched acrylic as the high-strength inner shell—a heat

and shatter resistant interlayer designated as Goodyear's "F-3"—and an outside thermal barrier of high temperature transparent material.

The sum of these three elements is no coincidence that there is no visible distinction between layers, and the impact resistance of this material is so great that even 45 caliber gun fire won't penetrate it—elements in place—or shatter its outer facing.

The result is a major advance in the state of the art.

Now—THERMOSHIELD can extend the important limits of transparent canopy laminates from Mach II to Mach III.

Now—THERMOSHIELD can bring new protection to supersonic aircraft requiring one piece canopy of compound curvature.

Now—THERMOSHIELD can be used as an impact resistant barrier for transparent canopies and windshields and/or as a face guard for military troops on the ground.

For more information on this major advance in engineering plastics—write Goodyear Aircraft Corporation, Dept. 914G, Akron 15, Ohio.

International: U.S. Patent and Trademark Office, Serial No. 2,814,264.

GOODYEAR AIRCRAFT
Plants in Akron, Ohio, and Litchfield Park, Arizona



welcome, aboard!

Now the Navy has a carrier-worthy jet trainer

For the first time, the Navy sent four of its flying sailors to make carrier landings and takeoffs in a basic jet trainer.

The T-2D Blueways trainer has successfully passed the stiff Navy qualification requirements for carrier aircraft. Trials covered a wide range of tests—from shipboard handling...to catapult launching...to touch-and-go and arrested landings.

The all-purpose TBM gives the Navy a new dimension in basic training. Now the student can train in a jet aircraft from primary through basic, including instrument

rotated. Flying, accelerated breathing and tactics, evasive maneuvers, and carrier training.

The Columbus Division of North American Aviation designed and is producing the Buckeye. It has a stall speed of under 80 mph, yet can fly at 400 mph. It features North America's new deck-level ejection system—equally effective on the ground as in the air—at any speed. Engine and internal equipment compartments

This package addition to the fleet means a broader, more efficient training program for the Navy's personnel and better-trained pilots to fly the Navy's advanced supersonic weapon systems.

THE COLUMBUS DIVISION OF NORTH AMERICAN AVIATION, INC.



AVIATION CALENDAR

- July 30-31 with annual Symposium on Computer and Data Processing. Denver Research Institute, Santa Barbara, Calif.

Aug. 1-2—Annual Meeting of the Regional Viking Airlines Association. South Pasadena Hotel, Los Angeles, Calif.

Aug. 5-7—Midwest Industrial Council Annual Conference on the problem of industrial waste disposal. University of Illinois, Urbana-Champaign, Ill., Nov. 1-2.

Aug. 9-12—Third National East Frontier Conference & Exhibit. University of California, Berkeley, Calif. Sponsored jointly by Society of Mechanical Engineers, American Institute of Chemical Engineers.

Aug. 11-12—Wright Air Development Center Symposium on Aircraft Structural Fatigue Problems. Dayton, Ohio.

Aug. 12-13—Annual Meeting of the Iron and Steel Institute of America. New Orleans, La.

Aug. 13-14—Eighteenth Annual Conference on Applications of X-Rays in the Study of Materials. Hotel Plaza Park, Columbus, Ohio.

Aug. 14-16—Dow Corning Research Meeting. Dow Corning, Midland, Mich.

Aug. 17-18—National Ultrasonic Symposium. Institute of Radio Engineers. Los Angeles Campus of University of Southern California, Los Angeles, Calif.

Aug. 18-21—Sixth Western State & Executive Institute of Radio Engineers. San Francisco Fair, San Francisco, Calif.

Aug. 23—One-day Metal Scrap Exchange Conference. St. Louis Board of Trade, St. Louis, Mo.

Aug. 24-25—Expo Dynamics Exposition. American Health Institute, Northfield, Ill., Chicago.

Aug. 24-26—Annual Meeting of the Acoustical Society of America. Spectracon Meeting. (Continued on page 6)



A matter of family interest

Frost & Whitney Aircraft has a "lively interest" in what happens to its engines throughout their many years of operation.

When a Pratt & Whitney Aircraft engine leaves our plant it's as good as we can make it. It's built to stay that way if properly serviced, using replacement parts that are exactly the same as original parts.

We are concerned every year about aspects of increased use of legume replacement protein and the potential hazard they present to the dependable and efficient operation of aircraft engines. Corroded parts are difficult to detect. They may look genuine but they could cause trouble.

As the heading "The Problem of Legume Farms," published by Flight Safety Foundation, Inc., points out, "Another reason for serious concern is that the aircraft engines certified by your aircraft may be suspended or revoked if legumes are used in the aircraft, aircraft or propellers."

Protect yourself against the problem of bogus parts by specifying original manufacturer's parts, and by dealing with authorized distributors or reputable overhaul or maintenance agencies. Don't take chances by buying part spare parts from a source which doesn't have a family interest in your engine.

"The Problem of Bogen Seats," published by Flight Safety Foundation, Inc. A free copy of this informative booklet may be obtained by writing to Print at Priority Airmail, East Hawthorne, Connecticut, Attention: Service Manager.



PRATT & WHITNEY AIRCRAFT

East-West Connection



CANADIAN PRATT & WHITNEY AIRCRAFT CO., LTD.
Longueuil, P.Q., Canada



Blind Nut

FIX SAVES THREE DAY DELAY

While a F4D Navy fighter was in its final position on the assembly line at Douglas Aircraft Company's Torrance, California, plant, a nut being used in the landing gear strut assembly was inadvertently knocked out. As the fast pump struts don't tolerate

The fix was accomplished without removal of any equipment or plumbing and the F4D moved on to the next stage of assembly. Sixty-five have been used for similar repairs at the Douglas Torrance facility.

HOT PLATE INSTALLATION

Two men working three days would have been required to install another drop pump strut. However, the new repair system can be installed easily by anyone by removal of the dual pump-strut and adjacent components.

Hundreds of members and thousands of aircraft have used "Hot Plate" procedures and fixtures through the use of stainless steel blind nuts and blind bolts to replace stripped nuts, loose rivets, damaged plates and the multitude of parts which are too conventional an approach would require the removal and reassembly of structural and mechanical components.

BLIND BLIND NUT INSTALLATION

An expert plane team from Douglas brought a Hi-Speed Rivet Tool Company sales engineer with a portable hydraulic Power Unit and maintenance gear to the plant. After the team had located and prepared the elliptical hole, the Hi-Speed man adjusted the Power Unit and gun and installed a "Blind Nut" in 10 seconds!

For more information about the new repair system, write to: RIVET TOOL COMPANY, 2400 West 54th Street, Torrance, California 90509.

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AVIATION CALENDAR

[Continued from page 1]

A seminar on supersonic warfare, organized by the Dept. of Defense, will be held Aug. 27-28—International Commercial Supersonic Symposium, Churchill Hotel, Westminster, London, England.

Aug. 31-Sept. 1—Annual Army-Navy Inter-

Services Program (ANSP) Symposium and Interavia Briefing, Shultz Hotel, San Fran-

ce, Calif.

Sept. 1-3—Annual International Federation Congress, Churchill Hotel, Westminster, London.

Sept. 3-12—Conference on physical chemistry in aerodynamics and rarefied gas dynamics of hypersonic flow, Office of Aerospace Research and General Electric Co., Muroc, Calif. and Space Vehicle Department.

Sept. 13-Sept. 14—10th Annual Congress International Astronautical Federation, Churchill Hotel, Westminster, London.

Sept. 14-15—Conference on physical chemistry in aerodynamics and rarefied gas dynamics of hypersonic flow, Office of Aerospace Research and General Electric Co., Muroc, Calif. and Space Vehicle Department.

Sept. 15-16—National Convention and Annual Meeting, Hotel Statler, Boston, Mass.

Sept. 15-16—1959 Pittsburgh Flying Display and Rehabilitation Society of British Aircraft Constructors, Pittsburgh, Pa.

Sept. 16-17—Midwest Materials Conference on Fast and Solid Materials, University of Illinois, Urbana, Ill., National Science Foundation, Department of Materials, Office of Naval Research, National Science Foundation.

Sept. 17-18—Traction Meeting, Carter Inn, New York, University of College of Engineering, The Incorporated College of Staten Island, Staten Island, New York, University Heights, N.Y., New York City.

Sept. 16-17—Ordnance Regional Meeting on Features in Science and Engineering, Institute of the Armed Services, Los Angeles, Calif.

Sept. 20-21—14th Annual Conference and Exhibit, American Society of Lubrication Engineers, Chicago, Ill.

Sept. 21-22—Eight Annual Meeting, Steel and Engineering Strength and Development, National Bureau of Standards, Boston, Mass.

Sept. 25-26—14th Annual Conference & Exhibit, American Society of Lubrication Engineers, Chicago, Ill.

Sept. 25-26—Engine and Operations Seminar, Newark Corp., Midvale, N.J.

Sept. 26-28—1959 National Symposium on Telecommunications, Cross Academy and Washington Hotel, San Francisco. Gold Sponsor: Institute of Radio Engineers Professional Group in Space Electronics & Telemetry.

Sept. 28-Oct. 2-19th Annual Meeting, Southeastern Airport Managers' Assn., Washington Park Hotel, Boca Raton, Fla.

Oct. 1-2—National Aerospace and Astronautics Association Annual Total Conference, Institute of the Astronautical Sciences Hotel Astor, New York.

Oct. 5-11—National Automobile Meeting, Society of Automotive Engineers, Wilshire Auditorium, Los Angeles, Calif.

Oct. 6-10—International Symposium on High Frequency Technology, National Bureau of Standards, Crystal Mountain, Formula Gold Sponsor: Stanford Research Institute.

Oct. 12-16—11th General Convention of the International Air Transport Assn., Tokyo, Japan.

Crosley

And

Fire Control Systems for the B-52

New and greater responsibilities have been given Avco's Crosley Division by the U.S. Air Force. Long a producer of fire control systems for bombers, including the B-47 and B-52, Crosley recently was named prime contractor for the ABO-1B fire control system on B-52 bombers ordered for the Strategic Air Command.

Crosley now has complete responsibility for engineering, production and performance. Two of Crosley's large plants manufacture, assemble and test complete turrets, computer and radar units for the ABO-1B system that both "searches" and "tracks" to aim the guns that defend the B-52.

In the months and years immediately ahead, many new and important improvements will be made in bomber defense. Crosley already is at work on several, and has achieved remarkable results that will be reflected in the bomber defense systems of the future.

Crosley's extensive experience and technical capability have made it the first name in fire control systems.

For further information, write to Vice-President, Marketing-Defense Products, Crosley Division, Avco Corporation, 1329 Arlington Street, Cincinnati 85, Ohio.

OPPORTUNITIES FOR ENGINEERS

Crosley Fire Control Systems Division is a highly diversified organization with experience in aerospace planning and development, research and development, manufacturing, design and service. We are: Director, Aerodynamic and Technical Programs Dept., 1329 Arlington Street, Cincinnati 85, Ohio; 1207 Madison Street, Cincinnati 21, Ohio.

Avco / Crosley

AWARDING WEEK, July 29, 1959

8



Sikorsky S-62 -a new look in helicopters

OPERATION: From land, water, shipboard, snow, ice, and—almost anywhere.

RELIABILITY: Millions-hour, time-proved components.

ADVANCED DESIGN: Increased payload, higher speed, more cabin space—all for less weight.

POWER: General Electric T-70 gas turbine, tailor-made for 'copters.

THE NEW LOOK: A sleek boat hull—and smoother, quieter, more comfortable operations—making new 'copter converts everywhere.

SIKORSKY AIRCRAFT, Stratford, Connecticut.
A division of United Aircraft Corporation.



HYATT HY-ROLLS IN P&W JT3 ENGINES HELP THE BOEING 707 SHRINK THE WORLD



HYATT HY-ROLL BEARINGS in each of the 4 Pratt & Whitney JT3 jet engines help the Boeing 707 cruise smoothly at 460 mph. Hyatt Bearings Division, General Motors Corporation, Harrison, N.J.

Another contribution to aviation progress

HYATT **Hy-ROLL BEARINGS**
FOR AIRCRAFT INDUSTRY



FOR THE DC-8...A FAIL-SAFE A-C SYSTEM weighing less than this family of 3



Designed by Douglas and J&H engineers, the DC-8's new a-c power system components weigh, in total, just 375 lbs. . . less than many a family of three who'll board the magnificent jet liner. The total system contains four complete electro-power plants. Each contains a generator ranging from the generator to the current transformer, and each represents the effluvia in reliability. All are so closely interrelated as to win a "double" report from editors of the aviation press.

Dramatic success of the DC-8 system through all phases of its development typifies how the J&H organization handles an over-all systems project. All research, development and production are conducted at one location for maximum teamwork, with no lost motion.

Whether your system problem is a-c or d-c... aircraft, missile or ground support... J&H has the experience and facilities to solve it for you. Check into these possibilities by writing to Jack & Heintz, Inc., 11233 Beaubien, Cleveland 1, Ohio.

For each DC-8 engine, J&H provides regulator, generator, panel, power relay and other protection and control components.



JACK & HEINTZ, INC.
SYSTEMS FOR AIRCRAFT, MISSILES AND GROUND SUPPORT

THE NAVY'S POLARIS:

DONNER *helps it think...*

One day soon the U.S. Navy will file a report more fantastic than any sea serpent tale we've ever heard. This will be the launching of the Navy's spectacular Polaris missile from a submerged nuclear submarine. Advanced testing is underway, the Polaris will be ready for the fleet in 1960.

Simpler and lighter than other intermediate range ballistic missiles, this formidable Lockheed developed weapon features much that is new in advanced electronics. It even "thinks" for itself.

One such "think" device aboard the Polaris is a system developed by Donner Scientific Company using a basic standard Model 4310 Accelerometer. The system monitors flight performance like a policeman directing traffic. If, for example, in the initial portion of the flight, the missile does not achieve sufficient velocity by a pre-determined time, the Donner system aborts the flight. The missile gets the go-ahead only as programmed.

Donner's role in the Polaris project represents another basic contribution from an engineering team which specializes in accurate systems, interlocking time, acceleration, velocity and other inputs designed to meet customers' requirements.

Donner welcomes your inquiries concerning the company's capabilities in this and related fields. Write Dept. 311.

DONNER SCIENTIFIC COMPANY
Concord, California



LOW COST MISSILE BAITS



AERONCA TARGET MISSILES PERFORM
A VARIETY OF MISSION PROFILES...
WITH SUBSTANTIAL ECONOMY

The adage "practice makes perfect" keynotes today's concept of missile warfare. Against supersonic targets, there isn't time for "the second best." Therefore, extensive operational testing of air defense systems . . . and testing programs for personnel who operate them . . . must be conducted to insure maximum performance.

To accomplish this requirement at minimum cost, Antares has developed two expendable, lightweight, high performance target systems under the Design Tool/Productivity umbrella concept. These progressive missile programs, the P-100 and P-101, are designed for maximum performance and accurate scoring at all required altitudes, speeds and ranges. And their production cost is projected to be substantially less than any current target munition system!

Another Aerion-produced missile project is Pogo-IV II Edo. Ground launched to high altitude, this target utilizes a starburst reentry package and an infrared seeker package. It is used as "baat" for such current projects as Rike, Tadis, Shrikevader and Falcon.

Multi-integrated Design, Timing and Production capabilities. Accurate time production systems management at cellular production levels.



NCA, manufacturing corporation
1714 GERMANTOWN ROAD • MIDDLETON, OHIO

GPL systems management
equipment for the Federal Aviation Agency

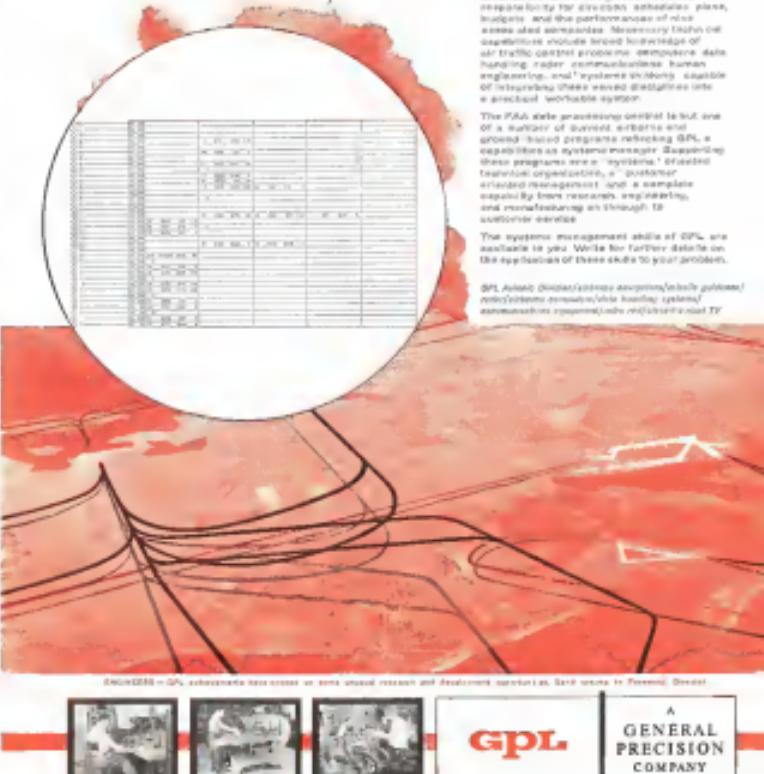
BP, a constraint for the PAA a experimental side-practicing scientist—the heart of tomorrow's air traffic control system—pointed to the diverse talents required of an effective systems manager.

The prime contractor for the FAA Bureau of Research and Development project GRP-1, conducted by the design and research organization for the division, submitted plans, budgets, and the performance analysis of new aircraft and engines. Numerous flight test experiments were held before knowledge of traffic control problems, meteorological data-handling rules, communications, human engineering, and regulations in their capable of integrating these revised design-aspects of integrated aircraft systems.

The DMSI study presented evidence to that effect, one of a number of surveys, reports and proposed model programs reflecting GPM's capacity as a systems manager. Supporting these programs are a "systems" division (responsible organizationally to a "systems" management) and a complete array of human resources, engineering, research and development, and production activities.

The systems management skills of 60% are insufficient for you. Write for further details on the free illustrated leaflets about your problems.

SP1. Autoload (bioactive) extracellular matrix proteins/functional guidance, stem/progenitor recruitment/white matter tracts/axons/oligodendrocytes/astrocytes/endothelial cells/white matter tracts/TF



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GENERAL PRECISION LABORATORIES INCORPORATED, Philadelphia, B. T.
A Division of the Ford Foundation and the National Endowment for the Humanities

Operational expansion has created openings for additional senior engineers. Write to M. W. Gordon, Personnel Manager.

BELL
HU-1A
 MOST ADVANCED
 HELICOPTER
 IN THE AIR

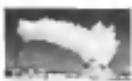
A Product of Army-Air Force Teamwork



The Army's all-new HU-1A is the first turbine-powered helicopter to be adopted as standard U.S. military equipment. No other helicopter in the world has been so thoroughly tested before being placed in service. The Air Force conducted Phases II, IV and V of the program, augmenting the Army's User Test, Desert Test, and 1000-hour Logistical Support Service Test.

The HU-1A has been praised by users everywhere for its simple design and ease of maintenance. In terms of flexibility, loadability and overall performance, it is truly a military man's helicopter.

This steady-service-proven helicopter offers outstanding capability in the areas of rescue, utility, mobile system supply, and liaison. It is now in production - it is available.



Missouri
Desert



Desert Test
Yuma, Arizona



Semi-arid plateau test,
Tucson, Arizona



Potomac and Potowmack
Areas, Duluth Air Force Base

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HELICOPTER CORP.

FORT WORTH, TEXAS SUBSIDIARY OF BELL AIRCRAFT CORPORATION



SPACE SAVING DESIGN

**LOCK HOLDS 27,750 LBS.
WITH GEAR COMPRESSED
96% OF STROKE**

WHEELS SYSTEM developed the HU-1A landing gear with a unique "hydraulic lock" that holds the gear safely compressed under 2.5 times the normal compressed pressure. When gear is dropped, lock automatically releases and strut is fully extended. Steel parts are heat treated 390,000-420,000 psi tensile strength.

More than 55,000 landing gear assemblies have been produced by Western Design, as well as other proven airborne components, assemblies, measurement systems, and ground handling equipment. Requirements, skill, experience and extensive production facilities are available to you.

Call or write today for 28-page facilities brochure.



WDI Western Design

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(30) at the trade-secret of a series of publications dealing with basic facts about alloy steels. Though much of the information is elementary, we believe it will be of interest to many in this field, including men of broad experience who may find it useful to review fundamentals from time to time.

Normalizing Alloy Steels

There are several forms of heat-treatment commonly employed in the processing of alloy steels. Each in its own way modifies the mechanical properties and structures of steel, and each is chosen with a definite objective in mind. The five usual forms of treatment are normalizing, annealing, spheroidizing, quenching and tempering, and stress-relieving.

In this particular discussion, let us consider briefly the purposes and effects of normalizing.

Normalizing is an operation in which the steel is heated to approximately 100 deg F above the upper transformation range, then cooled in still or agitated air. The basic purpose is to refine the prior structure produced by variations in finishing temperatures encountered in rolling or forging. The structure resulting from normalizing, being more uniform, will help create improved mechanical properties when the steel is subsequently reheated, liquid-quenched, and tempered.

There are times when large steel parts (heavy forgings, for example) cannot be liquid-quenched because of their size. In cases of this nature, the heat-treatment must consist of single or multiple normalizing followed by tempering.

High-temperature normalizing is sometimes used for grain-coarsening low-carbon alloy steels to promote machinability. (In high-temperature

normalizing, steel is heated to more than 100 deg F above the upper transformation range.) At times it is possible to machine a steel in the air-cooled condition, the governing factor being the alloy content. However, the highly alloyed analyses may require annealing or tempering after normalizing, to decrease the hardness.

It is essential, when normalizing is employed, that free circulation of still or agitated air be provided. When air-cooling of individual bars or forgings is not practicable, the furnace charge should provide for some means of separation, such as racks or spacers.

If you would care to know more about normalizing, or any other phase of heat-treating, you are invited to consult with Bethlehem metallurgists. They have had long experience in such matters, and they know how each treating method affects the various alloy steels. They are always glad to give you any help you need.

And when next in the market, please remember that Bethlehem makes the full range of AISI standard alloy steels, as well as special-analysis steels and all carbon grades. We can furnish what you need.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

Export Division:
Bethlehem Steel Export Committee



BETHLEHEM STEEL

LEAKS CAN BE STOPPED!



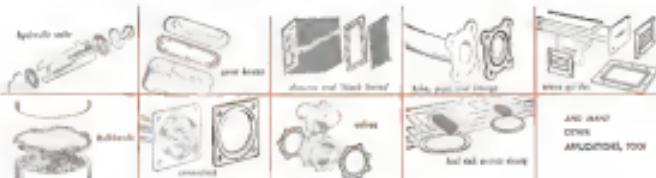
Controlled Confinement

Safe, sure sealing is vital in today's high performance aircraft, missiles and ground support equipment—and there is a better way to seal them . . . GASK-O-SEALS.

The Gask-O-Seals shown here are static seals that can actually provide sealing that will exceed hermetic specifications. Yet, they are mechanical, can be removed if necessary, and reused. Controlled confinement of the rubber makes them superior to other seals.

The "typical" applications shown are just a few of the ways Gask-O-Seals are being used. Pneumatic, truly non-sealing, no leakage sealing. If you want to seal for sure, find out about Gask-O-Seals.

Just drop us a line or use the reader service card.



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A DIVISION OF PARKER-HANNIFIN CORPORATION

